

## SEQUENCE LISTING

&lt;110&gt; NeuTec Pharma plc

&lt;120&gt; Medicament

&lt;130&gt; M99/0035/PCT

&lt;140&gt;

&lt;141&gt;

&lt;150&gt; GB9902555.3

&lt;151&gt; 1999-02-05

&lt;160&gt; 16

&lt;170&gt; PatentIn Ver. 2.1

&lt;210&gt; 1

&lt;211&gt; 1491

&lt;212&gt; DNA

&lt;213&gt; Chlamydia pneumoniae

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1491)

&lt;400&gt; 1

gat	aca	aac	atg	tct	att	tca	tct	tct	tca	gga	cct	gac	aat	caa	aaa	48
Asp	Thr	Asn	Met	Ser	Ile	Ser	Ser	Ser	Ser	Gly	Pro	Asp	Asn	Gln	Lys	
1				5					10					15		

aat	atc	atg	tct	caa	gtt	ctg	aca	tcg	aca	ccc	cag	ggc	gtg	ccc	caa	96
Asn	Ile	Met	Ser	Gln	Val	Leu	Thr	Ser	Thr	Pro	Gln	Gly	Val	Pro	Gln	
			20					25					30			

caa	gat	aag	ctg	tct	ggc	aac	gaa	acg	aag	caa	ata	cag	caa	aca	cgt	144
Gln	Asp	Lys	Leu	Ser	Gly	Asn	Glu	Thr	Lys	Gln	Ile	Gln	Gln	Thr	Arg	
		35					40					45				

cag	ggg	aaa	aac	act	gag	atg	gaa	agc	gat	gcc	act	att	gct	ggg	gct	192
Gln	Gly	Lys	Asn	Thr	Glu	Met	Glu	Ser	Asp	Ala	Thr	Ile	Ala	Gly	Ala	
	50					55				60						

tct	gga	aaa	gac	aaa	act	tcc	tcg	act	aca	aaa	aca	gaa	aca	gct	cca	240
Ser	Gly	Lys	Asp	Lys	Thr	Ser	Ser	Thr	Thr	Lys	Thr	Glu	Thr	Ala	Pro	
	65				70				75					80		

caa	cag	gga	gtt	gct	gct	ggg	aaa	gaa	tcc	tca	gaa	agt	caa	aag	gca	288
Gln	Gln	Gly	Val	Ala	Ala	Gly	Lys	Glu	Ser	Ser	Glu	Ser	Gln	Lys	Ala	
			85					90					95			

ggg	gct	gat	act	gga	gta	tca	gga	gag	gct	gct	act	aca	gca	tca	aat	336
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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Gly	Ala	Asp	Thr	Gly	Val	Ser	Gly	Ala	Ala	Ala	Thr	Thr	Ala	Ser	Asn		
			100					105					110				
act	gca	aca	aaa	att	gct	atg	cag	acc	tct	att	gaa	gag	gcg	agc	aaa	384	
Thr	Ala	Thr	Lys	Ile	Ala	Met	Gln	Thr	Ser	Ile	Glu	Glu	Ala	Ser	Lys		
			115				120					125					
agt	atg	gag	tct	acc	tta	gag	tca	ctt	caa	agc	ctc	agt	gcc	gcg	caa	432	
Ser	Met	Glu	Ser	Thr	Leu	Glu	Ser	Leu	Gln	Ser	Leu	Ser	Ala	Ala	Gln		
			130			135					140						
atg	aaa	gaa	gtc	gaa	gcg	gtt	gtt	gtt	gct	gcc	ctc	tca	ggg	aaa	agt	480	
Met	Lys	Glu	Val	Glu	Ala	Val	Val	Val	Ala	Ala	Leu	Ser	Gly	Lys	Ser		
					150				155						160		
tcg	ggg	tcc	gca	aaa	ttg	gaa	aca	cct	gag	ctc	ccc	aag	ccc	ggg	gtg	528	
Ser	Gly	Ser	Ala	Lys	Leu	Glu	Thr	Pro	Glu	Leu	Pro	Lys	Pro	Gly	Val		
				165					170					175			
aca	cca	aga	tca	gag	gtt	atc	gaa	atc	gga	ctc	gcg	ctt	gct	aaa	gca	576	
Thr	Pro	Arg	Ser	Glu	Val	Ile	Glu	Ile	Gly	Leu	Ala	Leu	Ala	Lys	Ala		
				180				185					190				
att	cag	aca	ttg	gga	gaa	gcc	aca	aaa	tct	gcc	tta	tct	aac	tat	gca	624	
Ile	Gln	Thr	Leu	Gly	Glu	Ala	Thr	Lys	Ser	Ala	Leu	Ser	Asn	Tyr	Ala		
			195				200					205					
agt	aca	caa	gca	caa	gca	gac	caa	aca	aat	aaa	cta	ggg	cta	gaa	aag	672	
Ser	Thr	Gln	Ala	Gln	Ala	Asp	Gln	Thr	Asn	Lys	Leu	Gly	Leu	Glu	Lys		
			210			215					220						
caa	gcg	ata	aaa	atc	gat	aaa	gaa	cga	gaa	gaa	tac	caa	gag	atg	aag	720	
Gln	Ala	Ile	Lys	Ile	Asp	Lys	Glu	Arg	Glu	Glu	Tyr	Gln	Glu	Met	Lys		
					230				235					240			
gct	gcc	gaa	cag	aag	tct	aaa	gat	ctc	gaa	gga	aca	atg	gat	act	gtc	768	
Ala	Ala	Glu	Gln	Lys	Ser	Lys	Asp	Leu	Glu	Gly	Thr	Met	Asp	Thr	Val		
				245				250					255				
aat	act	gtg	atg	atc	gcg	gtt	tct	gtt	gcc	att	aca	gtt	att	tct	att	816	
Asn	Thr	Val	Met	Ile	Ala	Val	Ser	Val	Ala	Ile	Thr	Val	Ile	Ser	Ile		
				260				265					270				
gtt	gct	gct	att	ttt	aca	tgc	gga	gct	gga	ctc	gct	gga	ctc	gct	gcg	864	
Val	Ala	Ala	Ile	Phe	Thr	Cys	Gly	Ala	Gly	Leu	Ala	Gly	Leu	Ala	Ala		
			275				280					285					
gga	gct	gct	gta	ggg	gca	gcg	gca	gct	gga	ggg	gca	gca	gga	gct	gct	912	
Gly	Ala	Ala	Val	Gly	Ala	Ala	Ala	Ala	Gly	Gly	Ala	Ala	Gly	Ala	Ala		
			290			295					300						
gcc	gca	acc	acg	gta	gca	aca	caa	att	aca	gtt	caa	gct	gtt	gtc	caa	960	
Ala	Ala	Thr	Thr	Val	Ala	Thr	Gln	Ile	Thr	Val	Gln	Ala	Val	Val	Gln		

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305	310	315	320	
gcg gtg aaa caa gct gtt atc aca gct gtc aga caa gcg atc acc gcg				1008
Ala Val Lys Gln Ala Val Ile Thr Ala Val Arg Gln Ala Ile Thr Ala	325	330	335	
gct ata aaa gcg gct gtc aaa tct gga ata aaa gca ttt atc aaa act				1056
Ala Ile Lys Ala Ala Val Lys Ser Gly Ile Lys Ala Phe Ile Lys Thr	340	345	350	
tta gtc aaa gcg att gcc aaa gcc att tct aaa gga atc tct aag gtt				1104
Leu Val Lys Ala Ile Ala Lys Ala Ile Ser Lys Gly Ile Ser Lys Val	355	360	365	
ttc gct aag gga act caa atg att gcg aag aac ttc ccc aag ctc tcg				1152
Phe Ala Lys Gly Thr Gln Met Ile Ala Lys Asn Phe Pro Lys Leu Ser	370	375	380	
aaa gtc atc tcg tct ctt acc agt aaa tgg gtc acg gtt ggg gtt ggg				1200
Lys Val Ile Ser Ser Leu Thr Ser Lys Trp Val Thr Val Gly Val Gly	385	390	400	
ggt gta gtt gcg gcg cct gct ctc ggt aaa ggg att atg caa atg cag				1248
Val Val Val Ala Ala Pro Ala Leu Gly Lys Gly Ile Met Gln Met Gln	405	410	415	
ctc tcg gag atg caa caa aac gtc gct caa ttt cag aaa gaa gtc gga				1296
Leu Ser Glu Met Gln Gln Asn Val Ala Gln Phe Gln Lys Glu Val Gly	420	425	430	
aaa ctg cag gct gcg gct gat atg att tct atg ttc act caa ttt tgg				1344
Lys Leu Gln Ala Ala Ala Asp Met Ile Ser Met Phe Thr Gln Phe Trp	435	440	445	
caa cag gca agt aaa att gcc tca aaa caa aca ggc gag tct aat gaa				1392
Gln Gln Ala Ser Lys Ile Ala Ser Lys Gln Thr Gly Glu Ser Asn Glu	450	455	460	
atg act caa aaa gct acc aag ctg ggc gct caa atc ctt aaa gcg tat				1440
Met Thr Gln Lys Ala Thr Lys Leu Gly Ala Gln Ile Leu Lys Ala Tyr	465	470	475	480
gcc gca atc agc gga gcc atc gct ggc gca cat aaa acc aat aat ttt				1488
Ala Ala Ile Ser Gly Ala Ile Ala Gly Ala His Lys Thr Asn Asn Phe	485	490	495	
taa				1491

&lt;210&gt; 2

&lt;211&gt; 496

&lt;212&gt; PRT

09889314-12001

&lt;213&gt; Chlamydia pneumoniae

&lt;400&gt; 2

Asp Thr Asn Met Ser Ile Ser Ser Ser Ser Gly Pro Asp Asn Gln Lys  
 1 5 10 15  
 Asn Ile Met Ser Gln Val Leu Thr Ser Thr Pro Gln Gly Val Pro Gln  
 20 25 30  
 Gln Asp Lys Leu Ser Gly Asn Glu Thr Lys Gln Ile Gln Gln Thr Arg  
 35 40 45  
 Gln Gly Lys Asn Thr Glu Met Glu Ser Asp Ala Thr Ile Ala Gly Ala  
 50 55 60  
 Ser Gly Lys Asp Lys Thr Ser Ser Thr Thr Lys Thr Glu Thr Ala Pro  
 65 70 75 80  
 Gln Gln Gly Val Ala Ala Gly Lys Glu Ser Glu Ser Gln Lys Ala  
 85 90 95  
 Gly Ala Asp Thr Gly Val Ser Gly Ala Ala Thr Thr Ala Ser Asn  
 100 105 110  
 Thr Ala Thr Lys Ile Ala Met Gln Thr Ser Ile Glu Glu Ala Ser Lys  
 115 120 125  
 Ser Met Glu Ser Thr Leu Glu Ser Leu Gln Ser Leu Ser Ala Ala Gln  
 130 135 140  
 Met Lys Glu Val Glu Ala Val Val Val Ala Ala Leu Ser Gly Lys Ser  
 145 150 155 160  
 Ser Gly Ser Ala Lys Leu Glu Thr Pro Glu Leu Pro Lys Pro Gly Val  
 165 170 175  
 Thr Pro Arg Ser Glu Val Ile Glu Ile Gly Leu Ala Leu Ala Lys Ala  
 180 185 190  
 Ile Gln Thr Leu Gly Glu Ala Thr Lys Ser Ala Leu Ser Asn Tyr Ala  
 195 200 205  
 Ser Thr Gln Ala Gln Ala Asp Gln Thr Asn Lys Leu Gly Leu Glu Lys  
 210 215 220  
 Gln Ala Ile Lys Ile Asp Lys Glu Arg Glu Glu Tyr Gln Glu Met Lys  
 225 230 235 240  
 Ala Ala Glu Gln Lys Ser Lys Asp Leu Glu Gly Thr Met Asp Thr Val  
 245 250 255  
 Asn Thr Val Met Ile Ala Val Ser Val Ala Ile Thr Val Ile Ser Ile  
 260 265 270  
 Val Ala Ala Ile Phe Thr Cys Gly Ala Gly Leu Ala Gly Leu Ala Ala  
 275 280 285  
 Gly Ala Ala Val Gly Ala Ala Ala Gly Gly Ala Ala Gly Ala Ala  
 290 295 300  
 Ala Ala Thr Thr Val Ala Thr Gln Ile Thr Val Gln Ala Val Val Gln  
 305 310 315 320  
 Ala Val Lys Gln Ala Val Ile Thr Ala Val Arg Gln Ala Ile Thr Ala  
 325 330 335  
 Ala Ile Lys Ala Ala Val Lys Ser Gly Ile Lys Ala Phe Ile Lys Thr  
 340 345 350  
 Leu Val Lys Ala Ile Ala Lys Ala Ile Ser Lys Gly Ile Ser Lys Val  
 355 360 365  
 Phe Ala Lys Gly Thr Gln Met Ile Ala Lys Asn Phe Pro Lys Leu Ser  
 370 375 380  
 Lys Val Ile Ser Ser Leu Thr Ser Lys Trp Val Thr Val Gly Val Gly  
 385 390 395 400

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Val	Val	Val	Ala	Ala	Pro	Ala	Leu	Gly	Lys	Gly	Ile	Met	Gln	Met	Gln
				405					410						415
Leu	Ser	Glu	Met	Gln	Gln	Asn	Val	Ala	Gln	Phe	Gln	Lys	Glu	Val	Gly
			420					425					430		
Lys	Leu	Gln	Ala	Ala	Ala	Asp	Met	Ile	Ser	Met	Phe	Thr	Gln	Phe	Trp
		435					440					445			
Gln	Gln	Ala	Ser	Lys	Ile	Ala	Ser	Lys	Gln	Thr	Gly	Glu	Ser	Asn	Glu
	450					455					460				
Met	Thr	Gln	Lys	Ala	Thr	Lys	Leu	Gly	Ala	Gln	Ile	Leu	Lys	Ala	Tyr
465					470					475					480
Ala	Ala	Ile	Ser	Gly	Ala	Ile	Ala	Gly	Ala	His	Lys	Thr	Asn	Asn	Phe
				485					490					495	

```
<210> 3
<211> 302
<212> PRT
<213> Artificial Sequence
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```
<220>
<223> Description of Artificial Sequence: Codon
      optimised N-terminal section of Chlamydia
      pneumoniae protein
```

```
<220>
<221> UNSURE
<222> (1)..(30)
<223> S-tag and thrombin cleavage site
```

```
<220>
<221> UNSURE
<222> (292)..(302)
<223> Histidine tag
```

```
<400> 3  
Met Lys Glu Thr Ala Ala Ala Lys Phe Glu Arg Gln His Met Asp Ser  
   1                   5           10             15
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Pro Asp Leu Gly Thr Leu Val Pro Arg Gly Ser Ala Ile Ser Asp Pro  
20 25 30

Asp Thr Asn Met Ser Ile Ser Ser Ser Ser Gly Pro Asp Asn Gln Lys  
35 40 45

Asn Ile Met Ser Gln Val Leu Thr Ser Thr Pro Gln Gly Val Pro Gln  
50 55 60

Gln Asp Lys Leu Ser Gly Asn Glu Thr Lys Gln Ile Gln Gln Thr Arg  
65 70 75 80

Gln Gly Lys Asn Thr Glu Met Glu Ser Asp Ala Thr Ile Ala Gly Ala  
85 90 95

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Ser Gly Lys Asp Lys Thr Ser Ser Thr Thr Lys Thr Glu Thr Ala Pro  
 100 105 110  
 Gln Gln Gly Val Ala Ala Gly Lys Glu Ser Ser Glu Ser Gln Lys Ala  
 115 120 125  
 Gly Ala Asp Thr Gly Val Ser Gly Ala Ala Ala Thr Thr Ala Ser Asn  
 130 135 140  
 Thr Ala Thr Lys Ile Ala Met Gln Thr Ser Ile Glu Glu Ala Ser Lys  
 145 150 155 160  
 Ser Met Glu Ser Thr Leu Glu Ser Leu Gln Ser Leu Ser Ala Ala Gln  
 165 170 175  
 Met Lys Glu Val Glu Ala Val Val Val Ala Ala Leu Ser Gly Lys Ser  
 180 185 190  
 Ser Gly Ser Ala Lys Leu Glu Thr Pro Glu Leu Pro Lys Pro Gly Val  
 195 200 205  
 Thr Pro Arg Ser Glu Val Ile Glu Ile Gly Leu Ala Leu Ala Lys Ala  
 210 215 220  
 Ile Gln Thr Leu Gly Glu Ala Thr Lys Ser Ala Leu Ser Asn Tyr Ala  
 225 230 235 240  
 Ser Thr Gln Ala Gln Ala Asp Gln Thr Asn Lys Leu Gly Leu Glu Lys  
 245 250 255  
 Gln Ala Ile Lys Ile Asp Lys Glu Arg Glu Glu Tyr Gln Glu Met Lys  
 260 265 270  
 Ala Ala Glu Gln Lys Ser Lys Asp Leu Glu Gly Thr Met Asp Thr Val  
 275 280 285  
 Asn Thr Val Ala Ala Ala Leu Glu His His His His His His  
 290 295 300

&lt;210&gt; 4

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Chlamydia pneumoniae

&lt;400&gt; 4

Ser Ala Lys Leu Glu Thr Pro Glu Leu  
 1 5

&lt;210&gt; 5

&lt;211&gt; 7

&lt;212&gt; PRT

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- 7 -

&lt;213&gt; Chlamydia pneumoniae

&lt;400&gt; 5

Pro Lys Pro Gly Val Thr Pro

1

5

&lt;210&gt; 6

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Chlamydia pneumoniae

&lt;400&gt; 6

Gly Val Thr Pro Arg Ser Glu Val Ile

1

5

&lt;210&gt; 7

&lt;211&gt; 6

&lt;212&gt; PRT

&lt;213&gt; Chlamydia pneumoniae

&lt;400&gt; 7

Glu Val Ile Glu Ile Gly

1

5

&lt;210&gt; 8

&lt;211&gt; 8

&lt;212&gt; PRT

&lt;213&gt; Chlamydia pneumoniae

&lt;400&gt; 8

Ala Ile Lys Ile Asp Lys Glu Arg

1

5

&lt;210&gt; 9

&lt;211&gt; 6

&lt;212&gt; PRT

&lt;213&gt; Chlamydia pneumoniae

&lt;400&gt; 9

Ser Gly Pro Asp Asn Gln

1

5

&lt;210&gt; 10

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Chlamydia pneumoniae

&lt;400&gt; 10

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Ser Gly Asn Glu Thr Lys Gln Ile Gln  
1 5

&lt;210&gt; 11

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Chlamydia pneumoniae

&lt;400&gt; 11

Ser Glu Gly Gln Lys Ala Gly Ala Asp  
1 5

&lt;210&gt; 12

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Chlamydia pneumoniae

&lt;400&gt; 12

Thr Ala Ile Glu Glu Ala Ser Lys Ser  
1 5

&lt;210&gt; 13

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Chlamydia pneumoniae

&lt;400&gt; 13

Ser Lys Ser Met Glu Ser Thr Leu Glu  
1 5

&lt;210&gt; 14

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Chlamydia pneumoniae

&lt;400&gt; 14

Glu Tyr Gln Glu Met Lys Ala Ala Glu  
1 5

&lt;210&gt; 15

&lt;211&gt; 14

&lt;212&gt; PRT

&lt;213&gt; Chlamydia pneumoniae .

&lt;400&gt; 15

Glu Lys Gln Ala Ile Lys Ile Asp Lys Glu Arg Glu Glu Tyr  
1 5 10

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- 9 -

&lt;210&gt; 16

&lt;211&gt; 14

&lt;212&gt; PRT

&lt;213&gt; Chlamydia pneumoniae

&lt;400&gt; 16

Glu Thr Pro Glu Leu Pro Lys Pro Gly Val Thr Pro Arg Ser  
1 5 10

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